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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/765,306	01/22/2001	Ikuya Kikuchi	041514-5105	8572

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EXAMINER

CHU, KIM KWOK

ART UNIT	PAPER NUMBER
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2653

DATE MAILED: 01/16/2004

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/765,306

Applicant(s)

KIKUCHI ET AL.

Examiner

Kim-Kwok CHU

Art Unit

2653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed on 10/14/03 (paper 8).
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Response to Remarks

1. Applicant's Remarks (paper 8) filed on October 14, 2003 have been fully considered but they are not persuasive.

(a) In the Remarks, on page 6, lines 13-18, Applicant points out that the prior art of Ogasawara provides phase difference on a reflected light beam by changing the refractive indices of the plurality of division areas of the liquid crystal. Applicant does not agree that the changing of the refractive indices in Ogasawara's liquid crystal device will have an effect of the amended feature "polarization phase difference" as recited in claim 1. Accordingly, the liquid crystal of Ogasawara is a birefringence control device (Fig. 3). In general, a birefringence material is optically anisotropic such that their optical properties are not the same along its two perpendicular axes. In other words, Ogasawara's liquid crystal is a light polarizer because its two distinct indices affect light differently when the light components passing through its two axes. Therefore, Ogasawara's liquid crystal produces light components with polarization phase difference.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1, 3-5 and 8 are rejected under 35 U.S.C. § 102(e) as being anticipated by Ogasawara et al. (U.S. Patent 6,151,154).

Ogasawara teaches an optical pickup having all of the elements and means as recited in claims 1, 3-5 and 8. For example, Ogasawara teaches the following:

(a) as in claim 1, a light source 1 for emitting a light beam (Fig. 1);

(b) as in claim 1, an object lens 5 for converging the light beam to be incident on an information recording medium 10 (Fig. 1);

(c) as in claim 1, a phase device 3 for providing the light beam having been reflected from the information recording medium

10 with a polarization phase difference between an inner light beam so as to decrease optical inference between an inner light beam and an outer light beam of the reflected light beam, the inner and outer light beam being inner and outer radius portions of the reflected light beam, respectively (Figs. 1, 3 and 11; phase device 3 is a birefringence means which produces polarization phase difference to cancel wave front aberration);

(d) as in claim 1, detecting portion 7 which detects the inner light beam and the outer light beam to generate at least one of focusing error signal and an aberration error signal of the light beam based on detected inner and outer light beam (Figs. 1, 12, 17 and 20; column 7, lines 7-16; column 17, lines 4-15; aberration error is corrected by canceling astigmatism as shown in Figs. 17 and 20);

(e) as in claim 3, the phase device 3 is a variable phase device in which the polarization phase difference is varied (Figs. 1 and 14A-14D);

(f) as in claim 4, the phase device 3 is a liquid crystal device in which relative polarization phase between the inner radius portion and the outer radius portion of the light beam emitted from the light source 1 is varied in accordance with an applied voltage ((Figs. 1 and 2A-2C);

(g) as in claim 5, an optical device 2 which is provided at an arbitrary position in an optical path between the light source

1 and the objective lens 5, the optical device 2 separating the light emitted from the light source 1 and the returning light from the information recording medium 10 and supplying the returning light to the detecting means 7 (Fig. 1); and

(h) as in claim 8, information recording or information reproduction is performed by irradiating the light beam on the information recording medium 10 (Fig. 1).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogasawara et al. (U.S. Patent 6,151,154) in view of Matsuura (U.S. Patent 6,510,111).

Ogasawara teaches an optical pickup very similar to that of the instant invention. However, Ogasawara does not teach the following:

(a) as in claim 2, the polarization phase difference of the phase device is set to a value in a range from $5\lambda/12$ to $7\lambda/12$;

and

(b) as in claim 6, a driving means for positioning the objective lens to a focal point on the basis of the error information detected by the detecting means.

Matsuura teaches a driving means 15 for positioning the objective lens 6 to a focal point on the basis of the error information detected by a detecting means 11 (Fig. 1).

With respect to the range of setting an optical phase device such as Applicant's and Ogasawara's, the setting value is not novel because the setting range is obtained by experimentally adjusting the phase device. In other words, in order to compensate the aberration error caused by the thickness variation of an optical recording medium, it would have been obvious to one of ordinary skill in the art to experiment a set of numbers such as $5\lambda/12$ to $7\lambda/12$ so that aberration caused by unevenness of the recording medium would have been cancelled.

On the other hand, with respect to Applicant's positioning of an objective lens based on a detected error, it is not novel. For example, Matsuura controls the focusing position of his objective lens with error signals derived from a photodetector. Hence, although Ogasawara does not teach how his objective lens is driven, for the necessary light focusing operation, it would

have been obvious to one of ordinary skill in the art to use an objective lens drive means such as Matsuura's to drive Ogasawara's objective lens, because Ogasawara's objective lens requires a positioning means to focus a light beam.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogasawara et al. (U.S. Patent 6,151,154) in view of Ootaki et al. (U.S. Patent 5,936,923).

Ogasawara teaches an optical pickup very similar to that of the instant invention. However, Ogasawara does not teach the following:

(a) as in claim 7, a spherical aberration compensation device which is provided at an arbitrary position in an optical path between the light source and the objective lens and compensates a spherical aberration of the light emitted from the light source on the basis of an error information detected by the detecting means so as to suppress an influence of the spherical aberration on the light beam that is caused by a thickness error of the information recording medium.

Ootaki teaches the following:

(a) a spherical aberration compensation device 3 which is provided at an arbitrary position in an optical path between the light source 1 and the objective lens 4 and compensates a spherical aberration of the light emitted from the light source 1

on the basis of an error information detected by the detecting means 7 so as to suppress an influence of the spherical aberration on the light beam that is caused by a thickness error of the information recording medium 5 (Fig. 1; column 8; lines 37-41).

Although Ogasawara teaches a phase change device 3 for compensating optical aberrations such as astigmatism, however, when both astigmatism and spherical aberration occur, an additional aberration compensation device is required. Hence, it would have been obvious to one of ordinary skill in the art at the time of invention to place an additional aberration correction device such as Ootaki's in Ogasawara's light path between the light source 1 and the objective lens 4, because the additional aberration compensation device would have properly focus a light beam by varying its refractive index according to the thickness variation of the recording medium.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bos et al. (5,825,448) is pertinent because Bos teaches a light beam phase control means.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

9. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks Washington, D.C.
20231 Or faxed to:

(703) 872-9306 (for formal communications intended for
entry. Or:

(703) 746-6909, (for informal or draft communications,
please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park
II, 2021 Crystal Drive, Arlington. VA., Sixth Floor
(Receptionist).

Any inquiry of a general nature or relating to the status of
this application should be directed to the Group receptionist
whose telephone number is (703) 305-4700.

Any inquiry concerning this communication or earlier
communications from the examiner should be directed to Kim CHU
whose telephone number is (703) 305-3032 between 9:30 am to 6:00
pm, Monday to Friday.

kc 1/8/04
Kim-Kwok CHU
Examiner AU2653
January 8, 2004

(703) 305-3032

William Korzuch
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